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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of

Gilles Cavallucci et al.

Art Unit: 2886

Serial No.: 10/540,579

Examiner: Akanbi, I. S.

Filed: June 24, 2005

For: METHOD AND DEVICE FOR OPTICALLY DETECTING THE
POSITION OF AN OBJECT BY MEASURING LIGHT REFLECTED BY
THAT OBJECT

REQUEST FOR RECONSIDERATION

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Sir:

Applicants request reconsideration of the rejection made in the Office
Action date June 22, 2007.

In review, all claims stand rejected under 35 U.S.C. § 103(a) based on the combination of United States Patent No. 5,220,409 to Bures and United States Published Patent Application No. 2002/0033805 to Fujioka et al. (Fujioka). In the rejection, the Examiner contends that Bures teaches all aspects of claims 1 and 13 but for the step/element of determining at least one position of the object by directly reading a table indexed by the at least two characteristic values, with the content of the table being predetermined and set before the measurement step.

In response to this failing in Bures, the Examiner cites Fujioka to allege

that the use of a table indexed to determine at least one position of an object by directly reading the table is known, and cites paragraphs [0047-0052].

Regardless of the teachings of Fujioka and the step involving reading of a table, Bures does not teach the remaining aspects of the method of claim 1 or the optical detection device of claim 13.

In review, claim 1 includes:

a step during which one of said receivers measures the quantity of light reflected by the object when the object is illuminated by one of said emitters for at least two different emitter-receiver pairs.

This measured value is then used when calculating at least two characteristic values, and the at least two characteristic values are used in determining the position of the object using the table.

Claim 13 is similar in that the receiver is defined as measuring a value representative of a quantity of light reflected by the object. Claim 13 also defines an element that obtains and stores the quantity of light reflected by the object. In addition, the device claims three elements that are arranged on the same side of the object whose position is to be determined.

One key flaw in the rejection is the Examiner's interpretation of Bures to teach object detection by reflection as is required by claims 1 and 13. In this regard, the invention uses light reflection on the object of which the position is to be determined. The use of reflection permits the implementation of an optical detection device and method that does not have to provide technical elements all around the area on which the position of the object can be determined.

This is contrasted with the case where light transmission is employed for object position determination with respect to a surface. In the case of using light transmission, it is necessary to provide optical elements on several sides of the surface, generally on two opposite sides of said surface. The optical elements may be emitters but also mirrors intended to reflect the light emitted by emitters on one side towards one of the other sides of the surface, on which receivers are provided. Using a transmission based system, light is transmitted through the surface except where light is partially interrupted by the presence of the object. The position of the object is deduced by the shadow generated by the presence of the object on one of several light receivers.

Turning back to the rejection now, the Examiner alleges that Bures teach the reflecting step of claim 1 and the receiver measuring the value of the reflected light of claim 13. Applicants submit that the interpretation of Bures is in error and this reference does not teach the reflecting aspect of claims 1 and 13. In fact, Bures uses the light transmission method described above.

More particularly, Bures is concerned with opto-matrix frames that use phototransmitters and photoreceptors, each arranged in X and Y arrays over an area so that a finger pointing action at a particular location on the area can be determined, see col. 1, lines 25-30. Bures sees a problem with these systems, wherein a large number of transmitters and receptors are required, col. 1, lines 47-58. Bures seeks to reduce the number of light elements to

reduce cost and complexity and accomplishes this aim by substituting reflecting means for the vast number of transmitters and/or detectors, see col. 1, lines 65-68.

More particularly, Bures discloses a device that uses reflectors 30, 44, or 50, see Figures 2, 6, and 5, respectively. These reflectors are used to send light originating from emitters F.O.X. and F.O.Y., see Figure 2, towards receivers XiL and XiR. The receptors are generally implemented along the same lines as the emitters, see for example, Figure 6.

The manner in which position of a finger on a touch screen is determined is described in col. 3, lines 23-29. That is, the object 20 (the finger of the operator) "interrupts one or more of the light beams" emitted by emitters F.O.X. and F.O.Y. When other and non-broken light beams are reflected towards the receivers XiL and XiR, the broken light beams, i.e., the shadow generated by object 20, are used to determine the X and Y coordinate.

Bures cannot be said to teach the method of claim 1. This claim requires a step wherein one or more of the receivers measures the quality of light **reflected** by the object when the object is illuminated by one of the emitters. While Bures does have reflected light as part of the device, this light is received as reflected from the reflectors, NOT THE OBJECT. Consequently, Bures cannot be said to teach the reflection step of claim 1.

Likewise, Bures does not teach the device of claim 13, wherein a receiver is provided to measure a value of the quantity of light reflected by the

object and an element is provided to obtain and store the measured quantity of light and use this measurement to determine the position of the object. Therefore, Bures cannot be said to teach the device of claim 13 with respect to the reflectors and the elements that use the information received for object position determination.

Since Bures does not teach the reflection aspect of claims 1 and 13, the Examiner must rely on other prior art to supply this deficiency. While Fujioka has been cited to address the use of the table to remedy a failing in Bures, this is not the issue given Bures' failure to teach the reflection aspect of the invention. The question of patentability now becomes whether Fujioka teaches anything that would serve as a basis to modify Bures regarding Bures' use of light transmission of object location so as to arrive at the invention of claims 1 and 13.

Fujioka lacks any reflectors whatsoever. Referring to Figure 4 of Fujioka, LEDs are positioned along two sides of the display panel, with phototransistors arranged along the other two sides. Notably, there are no reflectors used in Fujioka. Since Fujioka lacks any teaching regarding a reflector, it cannot remedy the failing in Bures, even if Fujioka were combined for its use of a table. Therefore, the prior art fails to establish a *prima facie* case of obviousness against claims 1 and 13 and the rejection based on Bures and Fujioka must be withdrawn.

Since independent claims 1 and 13 are demonstrated to be allowable over the prior art, their respective dependent claims are also in condition for

allowance.

Accordingly, the Examiner is respectfully requested to examine this application and pass all pending claims onto issuance.

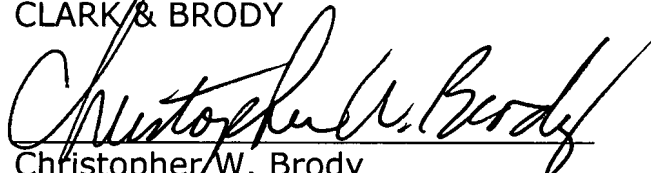
If the Examiner believes that an interview would be helpful in expediting the allowance of this application, the Examiner is requested to telephone the undersigned at 202-835-1753.

The above constitutes a complete response to all issues raised in the Office Action dated June 22, 2007.

Again, reconsideration and allowance of this application is respectfully requested.

Applicants respectfully submit that this disclosure is being filed in accordance with 37 C.F.R. 1.97(b), therefore, no fee is required.

Respectfully submitted,
CLARK & BRODY



Christopher W. Brody
Registration No. 33,613

Customer No. 22902

1090 Vermont Avenue, NW, Suite 250
Washington, DC 20005
Telephone: 202-835-1111
Facsimile: 202-835-1755
Docket No.: 71247-0041
Date: September 18, 2007